CHAPTER 2

SAMPLING

2.1 SAFETY

Official personnel [1] shall adhere to the following guidelines:

a. Comply with all pertinent Occupational Safety and Health Administration (OSHA) requirements (e.g., 29 CFR 1910-1918); follow all safety/sanitation rules in effect at the plant or warehouse; obey all posted warning signs and wear appropriate protective equipment when conditions warrant; and, when practical, carry a two-way radio for communication.

b. Wear a Sterns life vest, model IWV-222-1 (if not available, any U.S. Coast Guard-approved Type I, II, III, or V PFD life vests may be worn), when aboard barges or other vessels (midstream or dockside).

NOTE: Life vests must be international orange in color and contain retro-reflective panels. If used at night, the vest must be equipped with a light and a whistle.

c. Wear hard hats that meet the American National Standards Institutes (ANSI) Z89.1 or Z89.2 criteria. It is also recommended that official personnel wear shoes or boots that have nonslip soles and definite heels for good footing on ladders, wear clothes that are reasonably close fitting to reduce the possibility of becoming snagged on ladders or other structural elements, and wear gloves when climbing ladders and opening or closing hatches and doors.

d. Check the gangway before boarding or disembarking barges and other vessels. Do not use defective gangways. Exercise extreme care when using ladders that are permanently affixed to the carrier wall. Do not hand carry sampling equipment, radios, or other equipment while climbing ladders.

[1] The requirements referenced in this section are mandatory for FGIS employees. All others are strongly encouraged to also follow these guidelines.

e. Remain alert to your physical condition, especially when drawing samples inside carriers. Beans are sometimes treated with chemicals, usually for the purpose of controlling insect infestation. Contact with toxic fumes or sprays from these chemicals can cause serious injury or death. Shortness of breath, light- headedness, drowsiness, or a headache can be indicative of a dangerous atmosphere. When these symptoms are experienced, leave the area immediately and seek medical attention.

f. Travel to and from barges at midstream and other vessels at anchor via U.S. Coast Guard-approved launch, tugboat, licensed water taxi; or by Federal Aviation Administration-approved helicopter or air taxi. Do not jump on or off a barge or other vessel. You must be able to step easily from the launch to the vessel (or vessel to launch) without stretching or straining over water; expect slippery or obstructed deck conditions when boarding a vessel.

g. While walking on a dock or wharf, be alert for loose or rotting boards that may not support your weight. Learn the locations of life rings, emergency ladders, and telephones. Stay clear of cables whether slack or under tension.

h. Do not probe sample barges at night unless the barge is docked and sufficient artificial light is provided. Use caution when walking on decks and barge tops since they are uneven, slippery when wet, and have protruding cleats and latches. Do not remain on barges while they are being moved and be aware of nearby barges, docks, or vessels which could collide with the barge you are working on. Require the applicant for inspection to roll back the roll-top covers and to lock them in place with lock pins. Do not permit hatches to be opened or closed while you are inside the barge.

i. Do not walk through a break in a string of trucks separated by only a few feet. Be alert to such hazards as moving trucks, cables, debris, metal strapping, or broken ladders; and avoid breathing diesel exhaust fumes.

j. Before entering a railyard, notify your immediate supervisor, the yardmaster, or switch-crew foreman, and any other essential persons of your presence. Do not sample railcars in a railyard alone unless you are being monitored by someone who is in a position to render aid if needed. (Inquire about possible switching activities, cars carrying hazardous cargo, and any other unusual activity.)

k. Require that all activity cease on the track where you are working. Require the track to be locked out, or derails installed at both ends of the string of cars, or other appropriate, locally approved precautions; e.g., using blue flags with radio communication between you and the switch engine driver, using one or more additional employees as a safety observer to warn off approaching railcars, or using blue flags on an elevator hold-track where no railcar or switch engine movement takes place during the performance of official functions.

l. Do not probe sample railcars at night unless adequate artificial light is provided. Do not walk on the rails (walk parallel to the set of tracks and never between the two rails). Ensure that no power lines are close enough to present a hazard (minimum safe distance - 25 feet vertically and horizontally).

m. Check for placarded railcars. If a car is or is not placarded and a fumigant odor is detected, withhold the inspection (do not enter the car or sample the commodity) and notify your supervisor immediately.

n. Never crawl under railcars. Avoid climbing through railcars and over couplings and never walk through a break in a string of railcars separated by only a few feet (minimum safe distance - 20 feet). Be alert to such hazards as moving railcars, cables, debris along tracks, metal strapping, or broken ladders hanging from railcars.

o. Be alert to seasonal conditions, such as icy walking surfaces in the winter, and rodents, snakes, scorpions, wasps, and hornets in the warmer months.

p. Exercise caution when opening or closing car hatches or doors. If a hatch or door is stuck, request assistance from the applicant. Do not use your hands to break seals, use a cutting tool or pry bar.

q. Do not ride on an engine or car being moved or switched. If a car starts to move while you are inside, assume a sitting or kneeling position on top of or in the car to avoid losing your balance, and hold on. Do not attempt to descend a ladder or jump to the ground until the car has stopped and you can do so safely. Report all incidents of car movement to the yardmaster or your supervisor. (Supervisors should also report such movement to either OSHA or the Federal Railroad Administration.)

r. Notify the yardmaster (or foreman) when you leave the work area and report all "bad order cars" (e.g., missing ladder rungs, broken doors) to the car owner, the railroad, or the applicant for inspection.

s. When working in warehouses, watch out for forklifts and tow motors. Also, be alert for sacks slipping (falling) from improperly stacked pallets.

2.2 REPRESENTATIVE SAMPLE

Obtaining a representative sample from a lot of beans is an important and essential part of the inspection process. If the sample is not representative, the inspector's final determination will not reflect the true quality of the lot. For a sample to be considered representative, it must be:

a. Obtained by official personnel in accordance with official procedures;

b. Obtained using FGIS-approved equipment (see the FGIS Equipment Handbook);

c. Of the prescribed size (approximately 2,000 grams); and

d. Handled securely, protected from manipulation, substitution, and careless handling.

NOTE: Frequently, a sample drawn from one lot or portion of a lot is combined with another sample(s) to form a component, sublot, or combined-lot sample. Prior to combining such samples, the sampler must ensure that the samples are proportional; i.e., samples of like size represent like amounts of grain.

2.3 DETAILED WORK RECORD (SAMPLE TICKET)

a. The accurate recording of the lot's identity and its condition at the time of sampling is essential to the correct certification of the lot's quality. Samplers must record all unusual conditions and other pertinent information on the sample ticket. If the condition is not reported on the sample ticket, the lot could be inadvertently misgraded.

b. Sample tickets shall contain the following information:

(1) The sampler's signature or initials;

(2) The date the sample was obtained;

(3) The location of the lot of beans at the time of sampling (if the city and/or state in which the sampling took place is not obvious, this shall also be shown);

(4) Full identification of the lot;

(5) When applicable, information related to the condition of the carrier's storage area; and

(6) Any other pertinent information that may affect the grading or certification of the lot.

c. The original or copy of the sample ticket shall be retained by the issuing office in accordance with the Files Maintenance and Records Disposition Handbook.

2.4 LOT ACCESSIBILITY

a. The entire lot must be completely and safely accessible.

(1) When hazardous conditions exist which could endanger the heath of the sampler, consider the lot inaccessible and dismiss the service request. Hazardous conditions include, but are not limited to:

(a) The presence of unsafe levels of insecticide, fumigant, or other chemical odors;

(b) Uncontrolled railyard switching;

(c) Ice on top of barges, railcars, and other carriers;

(d) Broken or unsecured ladders;

(e) Low hanging electrical wires; and

(f) Improperly stacked pallets/danger of sack slippage (falling sacks).

NOTE: Labor and equipment necessary for making a lot accessible shall be furnished by the applicant.

(2) If a lot is not completely accessible for sampling, dismiss the request for service or, at the applicant's request, sample that portion that is accessible and issue a "partial inspection" certificate.

(3) When a "partial inspection" is requested, make notations on the sample ticket indicating the total number of containers in the lot and the number of containers that were accessible for sampling.

EXAMPLE: If there are 1,263 containers in a lot, but only 400 containers are accessible, the sampler's ticket should read: "Sample represents 400 containers only; balance of containers inaccessible for sampling; total containers in lot 1,263."

b. For the purpose of sampling sacked beans stored in a warehouse or similar facility, the lot shall be considered accessible when a minimum of one side of each pallet in the lot is accessible for sampling.

(1) The applicant or warehouse manager need not have every sack in the lot exposed and accessible for sampling unless requested to do so by the sampler.

(2) It is the sampler's prerogative to request any or all sacks in the lot to be made accessible for sampling should there be any reason to suspect that the lot is not uniform in quality.

(3) The following are some examples of when the sampler should suspect that a lot may not be uniform:

(a) Weathered, dirty, wet, or sour smelling sacks mixed in a lot of clean sacks. These sacks may contain beans of lower quality.

(b) Sacks with different markings. This could indicate the mixing of sacks from another lot which had different quality requirements.

(c) Sacks that appear to have trier penetration marks. These sacks may have been previously sampled, graded, and found to be of lower quality.

2.5 SAMPLE HANDLING AND SECURITY

a. A representative sample shall never be out of the control and/or observation of the sampler. Special care shall always be taken to protect samples from manipulation, substitution, and improper handling. There are many ways in which a sample may lose its representativeness. For example, a sample shall no longer be considered representative if it is:

(1) Spilled, no matter how little is lost or how much could be recovered.

(2) Stored in an improper manner or in an area not under the control of official personnel. When samples are not analyzed on the same day they are obtained, store them in a cool, dry place to prevent any change in condition.

(3) Transported by means which do not ensure the integrity of the sample.

NOTE: Official samples may be shipped via U.S. mail or commercial parcel service, provided that the samples are delivered directly to official personnel and all other necessary security precautions are taken. Such precautions may include enclosing the sample bag in a mail bag secured by a metal seal, if warranted.

b. Lockboxes or other security containers may be provided by the applicant at plants where official services are performed on a continuing basis. The lockboxes shall be:

(1) Of sufficient size to contain samples, sampling supplies and equipment, and checkweighing scales. It is not intended that items, such as dividers and probes, be stored in the lockbox.

(2) Placed in the immediate work area. Lockboxes shall not be placed in the basement or other remote locations. If it is impossible or impractical to locate the lockboxes in the immediate sampling area, a portable, lockable container, such as a locked metal pail, should be used.

(3) Equipped with a hasp for a padlock. Padlocks shall be provided by official personnel and, under no circumstances, shall keys to the padlocks be issued to or made accessible to unauthorized persons.

2.6 EXAMINATION OF PLANTS[1]

a. Official personnel shall examine or survey bean plants for insanitary conditions when:

(1) Required by Federal law or purchase contract;

(2) Required by FGIS Program Directive;

(3) Requested by the applicant for official services; or

(4) Deemed necessary by official personnel.

b. Insanitary conditions shall include those conditions that, in the opinion of official personnel, would render the beans unfit for human consumption but which may not be adequately reflected by the grade assigned to the beans. Insanitary conditions shall include, but not be limited to, the presence of:

(1) Vermin or insects;

(2) Toxic substances;

(3) Decayed animal or vegetable matter;

(4) Other filth; and

(5) Harmful substances, such as broken glass and metal shavings.

c. If the plant is approved as a result of the survey, official inspection services may begin or continue at a time agreed upon by plant management and official personnel.

d. If the plant is not approved as a result of the survey, official inspection services shall be conditionally withheld pursuant to the procedures in section 868.24 of the regulations under the Act, the FGIS "Sanitation Inspection Handbook," and FGIS Program Directive 9100.3.

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[1] The premises, buildings, structures, and equipment (including but not limited to, machines, utensils, vehicles, and fixtures located in or about the premises) used or employed in the preparation, processing, holding, transporting, and storage of beans. Establishments engaged only in the harvesting, storage, or distribution of beans prior to the beans being cleaned or otherwise processed for human consumption, are not considered as "plants" for the purpose of this directive.

2.7 EXAMINATION OF FILLED CONTAINERS

a. Official personnel shall examine filled containers to determine whether the beans being offered for inspection may have been contaminated or may become contaminated as a result of the condition of the container.

b. Filled container examinations include checking the containers, such as burlap, jute, cotton, kraft (paper), or polypropylene bags; cases; or bales to determine whether they are free from dirt, stains, tears, live or dead insects, insect webbing, and insect refuse.

c. If adverse conditions are found, note the conditions, kind of containers, and container markings on the sample ticket and in the "Remarks" section of the certificate.

2.8 EXAMINATION OF CARRIERS

a. When beans are to be sampled during loading, examine the carrier prior to loading (and when appropriate, the containers or sacks) for conditions that could adversely affect the quality of the beans. (See FGIS Program Directive 9180.48, "Stowage Examinations.") Adverse conditions include, but are not limited to, the presence of:

(1) Live weevils or other injurious insects;

(2) Odors of previously transported cargoes;

(3) Water;

(4) Out-of-condition beans or other commodities;

(5) Decaying animal or vegetable matter;

(6) Protruding objects which may damage the containers;

(7) Holes in the carrier's roof, sides, or floor; and

(8) Rust scale, dirt, chemicals, and unknown substances.

b. Record the results of the examination on a sample ticket, inspection log, general service or stowage examination worksheet, or other work record.

c. If no adverse conditions are found, sampling/loading may begin or continue at a time agreed upon by the plant management and official personnel.

d. If adverse conditions are found, official inspection service shall be conditionally withheld pursuant to the procedures in section 868.24 of the regulations under the Act.

NOTE: When beans are sampled after loading, examine the accessible portions of the carrier and note any adverse conditions on the sample ticket and in the "Remarks" section of the certificate.

2.9 EXAMINATION OF SAMPLE PORTIONS

Compare each sample portion taken from a lot with other sample portions drawn from the same lot for uniformity of quality and condition.

a. If all sample portions are uniform, composite the portions together.

b. If any sample portion is considered to be of distinctly different class, quality, or condition from the remainder of the sample portions, draw separate samples from the portion of the lot that contains the distinctly different beans, the remainder of the lot, and the entire lot. Keep the samples in separate containers and note on the respective sample tickets the estimated quantity of the lot represented by each sample.

2.10 SAMPLING CONTAINERS OF BEANS IN WAREHOUSES

a. Randomly select an appropriate number of containers from the lot.

(1) Determine the number of containers in the lot.

(2) Determine the minimum number of containers from which samples need to be drawn (see Table 1).

Table 1 - Sampling Rate

Containers [1] in lot	Sample Size	Containers in Lot	Sample Size	Containers in Lot	Sample Size
100 or less	10				
101 - 121	11	1,601 - 1,681	41	4,901 - 5,041	71
122 - 144	12	1,682 - 1,764	42	5,042 - 5,184	72
145 - 169	13	1,765 - 1,849	43	5,185 - 5,329	73
170 - 196	14	1,850 - 1,936	44	5,330 - 5,476	74
197 - 225	15	1,937 - 2,025	45	5,477 - 5,625	75
226 - 256	16	2,026 - 2,116	46	5,626 - 5,776	76
257 - 289	17	2,117 - 2,209	47	5,777 - 5,929	77
290 - 324	18	2,210 - 2,304	48	5,930 - 6,084	78
325 - 361	19	2,305 - 2,401	49	6,085 - 6,241	79
362 - 400	20	2,402 - 2,500	50	6,242 - 6,400	80
401 - 441	21	2,501 - 2,601	51	6,401 - 6,561	81
442 - 484	22	2,602 - 2,704	52	6,562 - 6,724	82
485 - 529	23	2,705 - 2,809	53	6,725 - 6,889	83
530 - 576	24	2,810 - 2,916	54	6,890 - 7,056	84
577 - 625	25	2,917 - 3,025	55	7,057 - 7,225	85
626 - 676	26	3,026 - 3,136	56	7,226 - 7,396	86
677 - 729	27	3,137 - 3,249	57	7,397 - 7,569	87
730 - 784	28	3,250 - 3,364	58	7,570 - 7,744	88
785 - 841	29	3,365 - 3,481	59	7,745 - 7,921	89
842 - 900	30	3,482 - 3,600	60	7,922 - 8,100	90
901 - 961	31	3,601 - 3,721	61	8,101 - 8,281	91
962 - 1,024	32	3,722 - 3,844	62	8,282 - 8,464	92
1,025 - 1,089	33	3,845 - 3,969	63	8,465 - 8,649	93
1,090 - 1,156	34	3,970 - 4,096	64	8,650 - 8,836	94
1,157 - 1,225	35	4,097 - 4,225	65	8,837 - 9,025	95
1,226 - 1,296	36	4,226 - 4,356	66	9,026 - 9,216	96
1,297 - 1,369	37	4,357 - 4,489	67	9,217 - 9,409	97
1,370 - 1,444	38	4,490 - 4,624	68	9,410 - 9,604	98
1,445 - 1,521	39	4,625 - 4,761	69	9,605 - 9,801	99
1,522 - 1,600	40	4,762 - 4,900	70	9,802 -10,000	100

NOTE: For lots packed in primary and secondary containers, the number of secondary (outer) containers in the lot is used to determine the number of containers to be sampled.

[1] If the lot contains more than 10,000 containers, divide the lot into 2 or more (approximately) equal-sized sublots of 10,000 containers or less, and sample each sublot separately.

b. Draw a sample from each selected container using an approved bean sack trier (see List of Approved Equipment - Equipment Handbook) of sufficient length to reach the center of the container, a compartmented trier of sufficient length to reach the bottom of the container, or a ladle.

(1) When sampling beans in large-sized containers (22.25 kilograms/50 pounds or more), use a bean sack trier or a compartmented trier.

(2) For sampling beans in medium-sized containers (4.5 to 22.24 kilograms/10 to 49.9 pounds), use a bean sack trier.

(3) For sampling beans in small-sized containers (less than 4.5 kilograms/10 pounds), use a ladle or take the entire contents of selected individual containers for the sample.

c. Draw a sample with a sack trier as follows:

(1) Insert the trier into the sack.

(2) Give the inserted trier two or three short in-and-out motions to allow a free flow of product through the trier into a sample container.

(3) Examine the sample for uniformity (class, quality, and condition). If uniform, combine the sample with other samples of equal quality from the same lot.

NOTE: Close all sack holes made during sampling.

d. Draw a sample with a compartmented trier as follows:

(1) Stand the container on end and insert the trier into the top of the container.

(2) Move the trier diagonally through the container until the end of the trier touches the bottom corner opposite the top corner from which it was inserted.

(3) Open the trier with the slots facing upward.

(4) While the slots are open, give the trier two or three short up-and-down motions so that the compartments in the trier can be filled.

(5) Close the trier gently to avoid damaging the beans, withdraw the trier, and place its contents full length on a sampling cloth.

(6) Examine the sample for uniformity (class, quality and condition). If uniform, combine the sample with other beans of equal quality from the same lot, sublot, or component.

e. After samples have been taken from a lot offered for inspection, the applicant is responsible for closing all open containers from which samples have been drawn and replacing containers taken as samples. If the applicant does not replace the containers that were removed or properly seal the containers which were left open, note on the sample ticket the number of whole/sealed containers remaining after sampling.

f. When sampling containers during movement (online), draw a sample from one of the first five containers that are packed, a sample from one of the last five containers, and the remaining samples at proportionate intervals during the packing of the lot.

2.11 SAMPLING CONTAINERS OF BEANS IN CARRIERS

a. When an applicant requests the inspection of a lot of beans in containers that are already loaded into a railcar, truck, or other carrier, the containers shall be considered to be accessible for inspection when "wells" are dug at the location and depth indicated by the sampler.

NOTE: Labor and equipment for digging the necessary "wells" shall be furnished by the applicant.

b. Select the containers for sampling as follows:

(1) Mentally divide the carrier into areas (A1, A2, D, B1, and B2) and sections (three sections for all areas but D; two sections for D). See Figure 1.

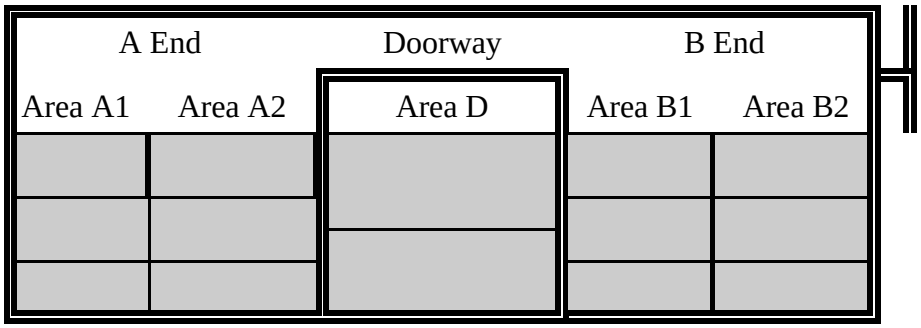


Figure 1. Side View - Areas and Sections of a Boxcar

(2) Six bags must be randomly selected from each of the areas identified as A1, A2, B1, and B2. Ten bags must be selected from area D. If the car is not loaded uniformly (e.g., area D is loaded six bags high, while areas A and B are loaded twelve bags high), select more bags from the areas containing more bags and less from those containing less, but always select at least 34 bags, total.

(3) Determine the locations where the wells must be dug so that the proper number of bags may be sampled from each section. (Whenever possible, limit the number of wells that must be dug to three, but dig the wells as deep as possible.) See Figure 2.

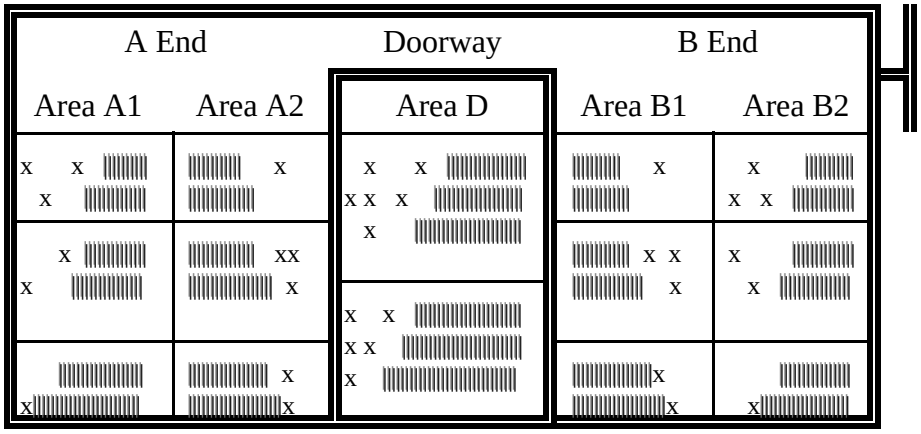


Figure 2. Side View of a Railcar with Three Wells, Selected Bags Indicated by **X** Marks

(4) Randomly select the sacks to be sampled from the sacks removed when making a well and from the exposed bags forming the well sides. (Use of random number cards/tables is optional.)

(5) Draw the sample portions. It is very important that approximately the same amount of sample be taken from each sack.

2.12 SAMPLING BULK BEANS AT REST

a. Use an approved double-tubed compartmented trier (see List of Approved Equipment - Equipment Handbook) of sufficient length to reach the bottom of the carrier.

Carrier	Length of Trier	Compartments
Barge	12-foot	20
Hopper Car	10- or 12-foot	20
Box Car	6-foot	12
Truck	5- or 6-foot	11 or 12
Hopper Truck	6-, 8-, or 10-foot	12, 16, or 20

b. Sample bulk beans at rest in a carrier as follows:

(1) Visually examine the lot at rest in the carrier. Record any unusual conditions on the sample ticket.

(2) Spread your canvas and make sure that it and the trier are clean and dry.

(3) For each type of carrier, there is an established sampling pattern (see pages 2-16 to 2-19). Probe the beans in the areas identified by the sampling pattern for the particular carrier.

(4) Insert the trier at a ten degree angle from the vertical, with the slots facing upward and completely closed.

(5) After the trier is fully inserted (with the slots facing upward), open the slots and move the trier up and down quickly in two, short motions.

(6) Close the slots very gently so as not to damage the beans, grasp the trier by the outer tube, and withdraw it from the lot. Do not pull trier by handle.

(7) Empty the trier on the canvas and compare the beans from each depth of the trier for uniformity of class, quality, and condition. Also compare the sample portion to others drawn from the same lot. If all sample portions are uniform, they shall be composited and placed in a sample bag along with a completed sample ticket.

NOTE: If the trier does not reach the bottom of the carrier, note the depth that is reached on the sample ticket.

c. The following diagrams show the standard sampling patterns. Each lot shall be probed in as many additional locations as are necessary to assure that the sample is the required size and representative of the lot.

(1) Additional probes shall be drawn in a balanced manner. For example, one compartment of a hopper car shall not be probed twice unless the other compartments are also probed twice, regardless of the amount of beans in any one compartment or the amount of additional sample needed.

(2) The sampling patterns in this section shall be used by all official inspection personnel when sampling beans at rest. Insert the probe at the points marked (X), with the tip of the probe pointed toward the direction of the arrow head. When two arrow heads are shown, the tip of the probe may be pointed in either direction.

(3) Sampling Pattern for Barges. Draw one probe sample from each opening in the direction of the arrow head. Insert the probe in the center of the opening, approximately 7 feet from the side edge.

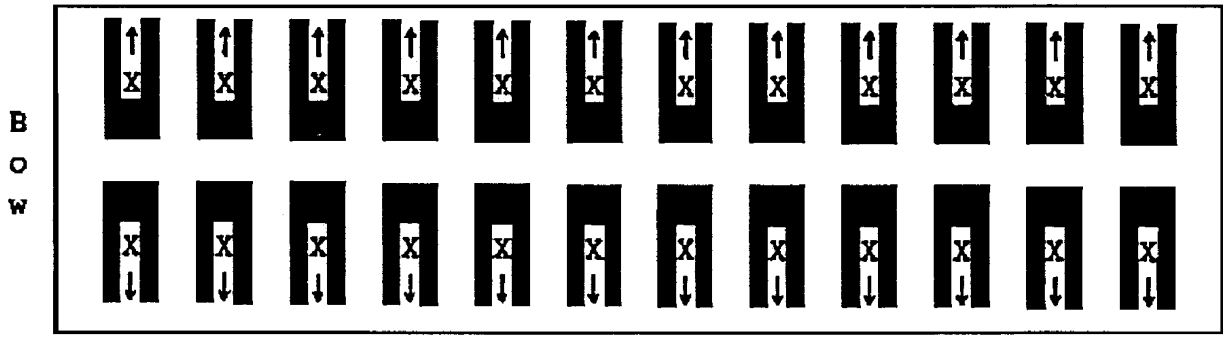


Figure 3. Fiberglass Hatch Top Barge

(4) Sampling Pattern for Hopper Cars. Insert probe in the direction of the arrow at an approximately 10-degree angle, the probe may be inserted either in the center of each hopper or slightly off center in order to miss the cross beam.

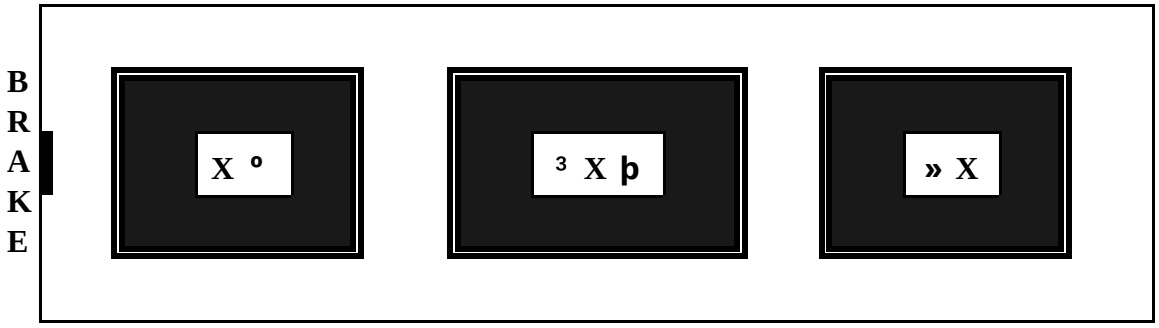


Figure 4. 3-Compartment, Trough or Door Type Hopper Car

(5) Sampling Pattern for Box Cars. Insert the probe at an approximately 10-degree angle in the direction of the arrows shown in the diagram. The probe pattern shown may also be used in reverse of the one shown.

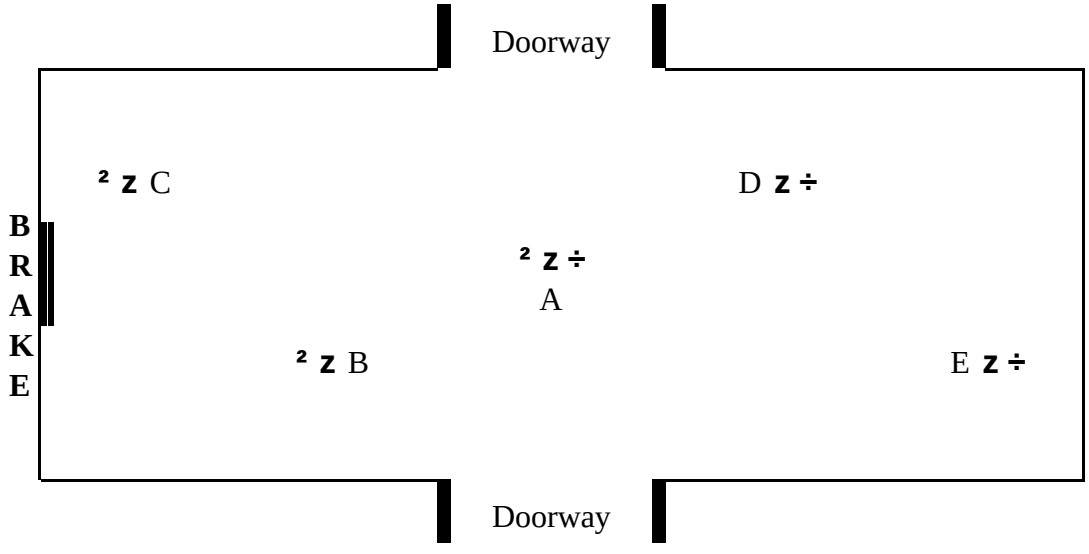


Figure 5. Boxcar

(6) Sampling Patterns for Trucks. Insert the probe at an approximately 10-degree angle in the direction of the arrows shown in the diagram. The probe pattern shown may also be used in reverse of the one shown.

(a) Flat-Bottom Trucks or Trailers Containing Beans More than 4 Feet Deep or Eight Filled Probe Compartments.

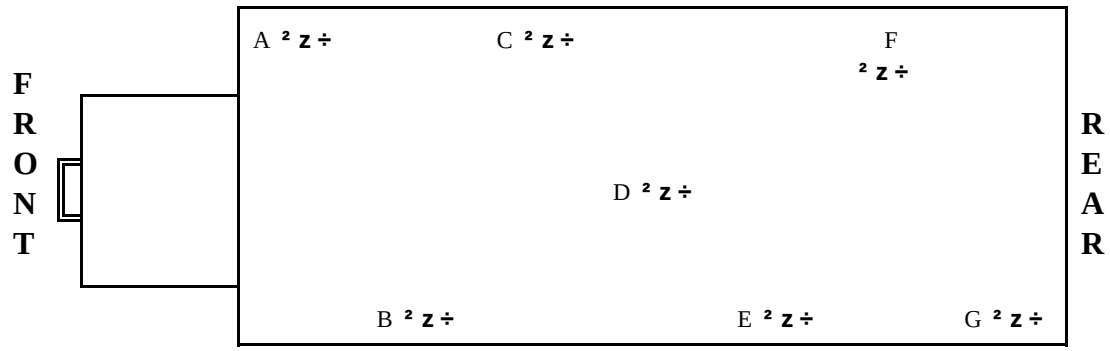


Figure 6. Flat-Bottom Truck or Trailer

(b) Flat-Bottom Trucks or Trailers Containing Beans Less than 4 Feet Deep or Fewer than Eight Filled Probe Compartments.

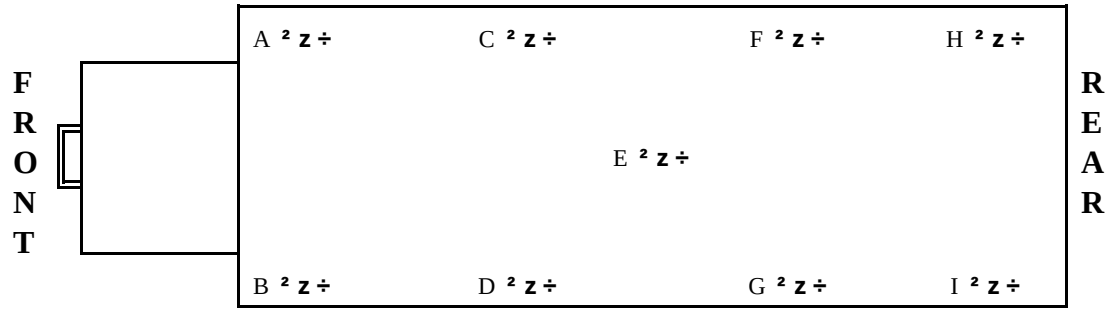
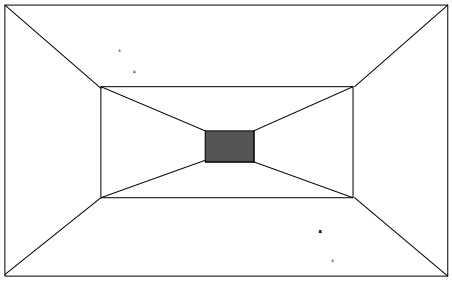


Figure 7. Flat-Bottom Truck and Trailer

(7) Sampling Pattern for Hopper-Bottom Containers, Trucks, and Trailers. Insert the probe at an approximately 10-degree angle in the direction of the arrows shown in the diagram.

Figure 8. Aluminum Hopper-Bottom Container



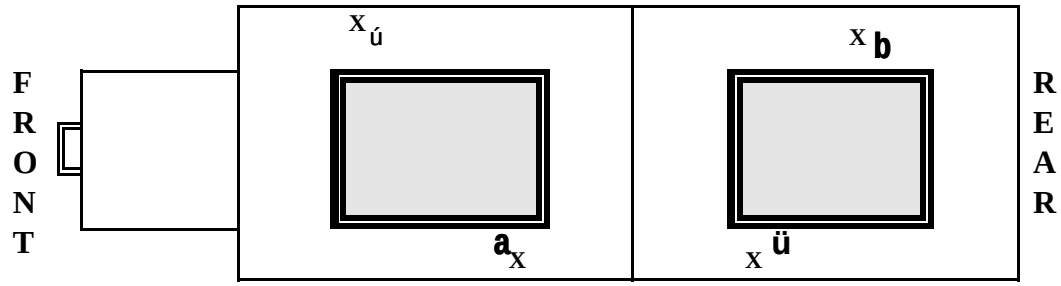


Figure 9. Hopper-Bottom Truck and Trailer

d. Sample bulk beans in tote bags (i.e., large flexible containers holding 500 - 3000 pounds of beans).

(1) For lots of 1 to 4 tote bags, draw a total of no less than five probe samples from the entire lot. Always draw the same number of probe samples from each bag.

(2) For lots of 5 to 9 tote bags, draw at least one probe sample from each bag. Always draw the same number of probe samples from each bag.

(3) For lots of 10 to 40 tote bags, draw no less than ten probe samples from the entire lot. Randomly select the bags to be probed, draw no more than one probe sample from each selected bag.

(4) For lots of 41 or more tote bags, draw one probe sample from at least 25 percent of the bags in the lot or ten probe samples from the entire lot, whichever is greater. Randomly select the bags to be probed, draw no more than one probe sample from each selected bag.

2.13 SAMPLING BULK BEANS DURING MOVEMENT

a. Diverter-Type Mechanical Sampler. FGIS tested and approved diverter-type mechanical samplers (D/T) may be used to sample bulk beans during movement. (See the FGIS Mechanical Sampling Systems Handbook for testing and approval information.)

(1) Prior to using a D/T, ensure that the system is clean and free from beans or debris from a previous shipment.

(2) For sampling beans as they are being placed in sacks or similar containers, set the D/T counter switch so that the pelican will traverse the stream at least once every 25 containers.

(3) For sampling beans being loaded into bulk carriers, set the timer in accordance with prescribed procedures in the FGIS Mechanical Sampling Systems Handbook.

b. Pelican Sampler. FGIS-approved pelican samplers may be used to sample beans in a falling stream.

(1) To draw a sample using the pelican, first grasp the pelican's handle firmly. Then, swing the pelican completely through the stream in one continuous motion. This is known as taking a "cut."

(2) The following is the minimum number of "cuts" required:

Hopper Car	-	2 cuts per compartment
Boxcar	-	4 cuts per carrier
Truck	-	2 cuts per carrier
Barge/Ship	-	1 cut per 13,500 kilograms (30,000 lbs.)

WARNING: Sampling a free-falling stream of beans with a pelican sampler can be dangerous. Assure yourself of firm, nonskid footing. Retrieving lines may be attached to the handle of the pelican and the carrier. Do not tie retrieving lines to a person.

c. Ellis Cup. FGIS-approved Ellis cup samplers may be used for sampling beans moving on a conveyor belt.

(1) Draw a sample using the Ellis cup as follows:

(a) Hold the Ellis cup firmly and upright, with the sides of the cup parallel to the sides of the conveyor belt, and with the open end of the cup facing the oncoming flow.

(b) Push the curved portion of the cup straight down in the center of the stream to the full depth of the beans. After filling, withdraw the cup and empty it.

(c) Then, immediately draw two more portions from the stream; one to the left of center and one to the right of center. This is known as taking a "set" of samples.

NOTE: When drawing samples with an Ellis cup from beans in a narrow stream or on a slow moving conveyor belt, all portions may be taken from the center of the stream and portions may be drawn in a delayed manner, as necessary.

(2) The following is the minimum number of "sets" required:

Hopper Car	-	1 set per compartment
Boxcar	-	2 sets per carrier
Truck	-	1 set per carrier
Barge/Ship	-	1 set per 13,500 kilograms (30,000 lbs.)

WARNING: Ensure that you have good footing to avoid falling onto the belt and that a U-shaped protective guard rail is installed not less than 2 feet above each belt and secured to the floor.